

Effect of Cost Reductions on KOPIO

(WBS 1.4.1) AGS/Booster Modifications

(1.4.1) Active Filter-\$200K (\$151K)

This is potentially harmful to microbunching performance but is difficult to quantify. Fixing the phasing would be a major improvement and an upgrade is in progress including introducing computer controlled feedback on the phasing to minimize ripple. The project is manpower limited but might be given higher priority. Simulations of the effect of another active filter the upgrade are in progress and is believed that another active filter would result in additional ripple reduction at 60 and 120 Hz. The original estimate of \$151K for an active filter is thought to be low with \$200K being a more realistic cost.

(1.4.1) Spare Booster and AGS Magnet Coils and Collimators-\$1048K

No direct effect.

J10 Bump, Low Ripple P.S.-\$233K

No direct effect

100 MHz RF Cavity-\$2,200K

This is a backup in order to push the rms microbunch width obtained with the 25 MHz cavity from less than a simulated 500 ps to better than 200 ps. This is difficult to evaluate since results of the FY04 microbunching studies are not in agreement with the simulations or the FY03 studies. It could be delayed until performance with the 25 MHz cavity is measured in an engineering run with a finite length production target which contributes an additional timing spread of approximately 1 ps/mm of length. The lead time for obtaining and installing one should be evaluated. Design should proceed in the event that the 100 MHz cavity is found to be essential. Alternate year operation with MECO would allow for fabrication and installation. This may violate the AGS upgrade agreement with the Canadian funding sources.

(WBS 1.4.3) External Beam and Experimental Construction

(1.4.3.1) Controls-\$2.2K

Power supply modifications have been cancelled and the controls modifications are therefore reduced. Little or no effect on experiment.

(1.4.3.2.2)Primary Beam-B1,B2,B5 and C1,C3,C7 removal-\$477K

This could slow the construction schedule while awaiting DOE funds for this purpose.

(1.4.3.5)Power supply modifications-\$202.6K

This should have little or no effect on the experiment. It was proposed to be compatible with existing upgraded controls.

(1.4.3.2.7) B Line Transport Instrumentation-

(1.4.3.2.7.1) EPM's/Plunging SWIC's-\$61.1K

The details of this reduction aren't clear. It could increase time spent on primary beam tuning and diagnostics for initial runs.

(1.4.3.2.7.2) B Target Instrumentation-\$91.0K

This is to be replaced in part by devices in (1.4.1.7.1)- Both of these changes should be reviewed since inadequate instrumentation can lead to significant lost beam time.

(1.4.3.2) Vacuum pumps-\$59.4K

Old pumps are reasonably reliable and spare parts exist.

(1.4.3.3) Radio remote EEBA crane control-\$48.7K

This would have increased the efficiency of rigging during beam line and experimental construction.

(1.4.3.3.6) Hardware and software modifications for instrumentation and power supplies-\$131K

No direct effect on experiment with the possible exception of reliability

(1.4.3.4) B Line Security system-???

NOT costed?? Not reduced!

(1.4.3.5.5)Neutral Beam sweeping magnet power supplies and controls-\$81.1K

Use existing power supplies. No direct effect on experiment.

(1.4.3.6) Removal of MPS and filling of pit-\$62K

Experiment will be located to avoid conflict or DOE HEP cleanup funds can be used for this purpose.